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PROGRAM MANAGEMENT COURSE INDIVIDUAL STUDY PROGRAM

THE PLANS, SCHEDULES AND STUDIES
BRANCH OF THE PM1 PROJECT MANAGER'S
OFFICE: AN ANALYSIS

STUDY PROJECT REPORT
PMC 76-2

Paul Michael Root
Major US Army

FORT BELVOIR, VIRGINIA 22060

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DEFENSE SYSTEMS MANAGEMENT COLLEGE

STUDY TITLE: The Plans, Schedules and Studies Branch of the XM1 Project Manager's Office: An Analysis

STUDY PROJECT GOALS: Identification and examination of the major functions of the Plans, Schedules and Studies Branch. Comparison of its organization and function with those of similar branches of selected other Army Project Management Offices. Suggestion of possible future changes in the organization and role of the Branch.

STUDY REPORT ABSTRACT: The study project was primarily conducted to educate the author on the role of the Plans, Schedules and Studies Branch and the effort involved in carrying out its assigned functions. The Organization and Functions Regulations of selected Army Projects were used to determine the assigned functions of comparable Branches, and telephone interviews with the Branch Chiefs were used to determine the internal organization and division of responsibilities.

All projects considered, except one, had Program Management Divisions with similar responsibilities. Below division level all were organized differently, dividing the cost analysis, budgeting, operations and planning functions among Branches differently.

Based on comparison, the author concludes that the organization of the XM1 Plans, Schedules and Studies Branch is effective and it controls the planning function very well. No recommendation for change of organization or role are made at this time.

The study will be useful for anyone who wishes to better understand the planning function in a Project Manager's Office. The recommendation is made that similar studies be conducted to cover all divisions in a Project Manager's Office.

SUBJECT DESCRIPTORS: Project Management, Plans, Planning, XM1

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Paul M. Root, Major U.S. Army	PMC 76-2	November 1976

THE PLANS, SCHEDULES AND
STUDIES BRANCH OF THE
XM1 PROJECT MANAGER'S OFFICE:
AN ANALYSIS

Study Project Report
Program Management Course
Class 76-2

by
Paul Michael Root
Major US Army

November 1976

Study Project Advisor
Mr. Bill Cullin

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This study project report represents the views, conclusions and recommendations of the author and does not necessarily reflect the official opinion of the Defense Systems Management School or the Department of Defense.

EXECUTIVE SUMMARY

This paper examines, in greater depth than is otherwise available, the functions of the Plans, Schedules and Studies Branch of the Project Management Division of the XML Project Manager's Office. The functions are analyzed by outlining the actual duties involved, reports required, and time needed in performing each. The organization of the Plans, Schedules and Studies Branch was compared with that of similar branches in the MICV, UTTAS, M60 Tank Development and M60 Tank Production Projects which demonstrated the variety of organizations which can effectively perform basically the same job. Based on the comparison, it was determined that the Branch performs its functions well and has an effective organization, and no change in either role or organization should be recommended at this time.

The impact of this study was to educate the author in the functioning and roles of the Plans, Schedules and Studies Branch. The study should be of assistance to anyone who wishes to better understand the implementation of the planning function in a Project Manager's Office. Due to the lack of available references in this area, the author recommends that DSMC conduct a series of similar studies, at the Division level, which will cover all the functions of a Project Manager's Office in a similar manner.

ACKNOWLEDGEMENT

The author wishes to thank Mr. Bill Cullin of the Defense Systems Management College for his helpful comments in the preparation of this study. The assistance provided by LTC Robert Lipinski, Chief of the Plans, Schedules and Studies Branch of the XM1 Project Manager's Office was invaluable to the author in gaining insight into the functioning of his Branch.

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INTRODUCTION

The XM1 tank is one of the Army's "Big Five" major weapons acquisition projects. It has this "distinction" due to its military importance and cost. It is the Army's third attempt to field a new tank to replace the obsolescent M60 series of tanks, which, even with an effective modification program, are rapidly reaching their maximum level of effectiveness. (18:1)

As one of the "Big Five", the project is subject to close scrutiny by the Army Staff, OSD and Congress. The total program cost, with a production run of over 3300, is currently estimated to be nearly \$5 billion. (8) Recent OSD decisions to use the German 120 mm gun or to build the Leopard II AV under license instead of the XM1, if implemented, will have the effect of increasing the unit cost by at least 15%, and have attracted the interest of the House Armed Services Committee. Currently, the program is awaiting a source selection decision to go into the full-scale development phase of the acquisition process. (11)

Subsequent to attendance at DSMC, the author will be assigned to the XM1 Project Manager's office, tentatively to the Plans, Schedules and Studies Branch of the Project Management Division. A study project on this future assignment seemed to be an excellent opportunity for him to become more knowledgeable in a specific area of project management and, by studying his future assignment, to be an opportunity to decrease the break-in time before he could function effectively in his new job.

A second benefit to this has become apparent as the course of study at DSMC has progressed. Nowhere in the Project

Manager's course is it explained exactly what the various divisions and branches of a Project Manager's office do and what occupies the time of the people in those areas. The student can look at AMCR 11-16, Vol. 2 or a project's Organization and Functions Regulation for some generalized functions, but there is no indication of the exact nature or the magnitude of the tasks involved. It is hoped that this paper will be an amplification on the XM1 Organization and Functions Manual and will give the student some insight into what the major duties of the Plans, Schedules and Studies Branch really involve.

Specifically, after a brief overview of the Project's organization, this report will examine the Plans, Schedules and Studies Branch of the Program Management Division, its evolution, organization and functions, and its role in the Project Manager's office. The reference document for what the Branch actually does will be the functions listed in the XM1 Reg. 10-2, the Organization and Functions regulation. Each assigned function will be explained in terms of the nature and scope of work involved, the interactions with the other divisions within the project, and the coordination with agencies outside the project.

The mission of the Branch is evolving as the project progresses, and its actual functions at a recent point in time will be examined to provide an idea of where time and effort were being used. Future tasks will also be mentioned to illustrate the direction in which the Branch is proceeding.

Within the framework of AMCR 11-16, each PM is able to tailor his organization, and no two PM offices are organized alike. A

brief comparison will be made with selected other Army Project Management offices to compare the internal organizations of the equivalent branches and to determine if there are any obvious organizational or functional improvements which could be made in the Plans, Schedules and Studies Branch.

ORGANIZATION OF THE PROJECT MANAGER'S OFFICE

After the demise of the MBT70 and the XM803 programs, a task force was organized to prepare a statement of Military Need, and the conceptual studies for the new tank program. (12) The Project Manager's charter was signed on 18 July 1972, and the PM's office was to be located at the Tank-Automotive Command in Warren, Mi. (2:A-1) This location has several advantages. It allows the PM to draw on TACOM resources as necessary, and is close to the two possible prime contractors, General Motors and Chrysler.

The Project Manager's Office is organized basically in accordance with AMCR 11-16, Vol. 2, tailored as necessary to fit the XM1 project. It is an aggregate PM Office, staffed with approximately 120 people, the majority civilians, and is nearly self-sufficient. It draws on the functional organization at TACOM and outside agencies as necessary for its support. (8) The current organization is as shown in Figure 1, with the exception that the Main Armament Development Division, a recent change, is not illustrated. The Office of Assistant PM for Tank Main Armament Development was created to handle all aspects of main armament development, and to coordinate with the U.K. and F.R.G. on these matters. His division is located at Picatinny Arsenal, N.J., and one of its main concerns is the improved ammunition (M735) for the current 105 mm main gun. (20:12-2)

The Washington Field Office basically provides Washington area coordination for actions as directed by the P.M., and liason with DA, DARCOM, OSD and Congress. It provides assistance in obtaining approval of plans and programs which must be coordinated with

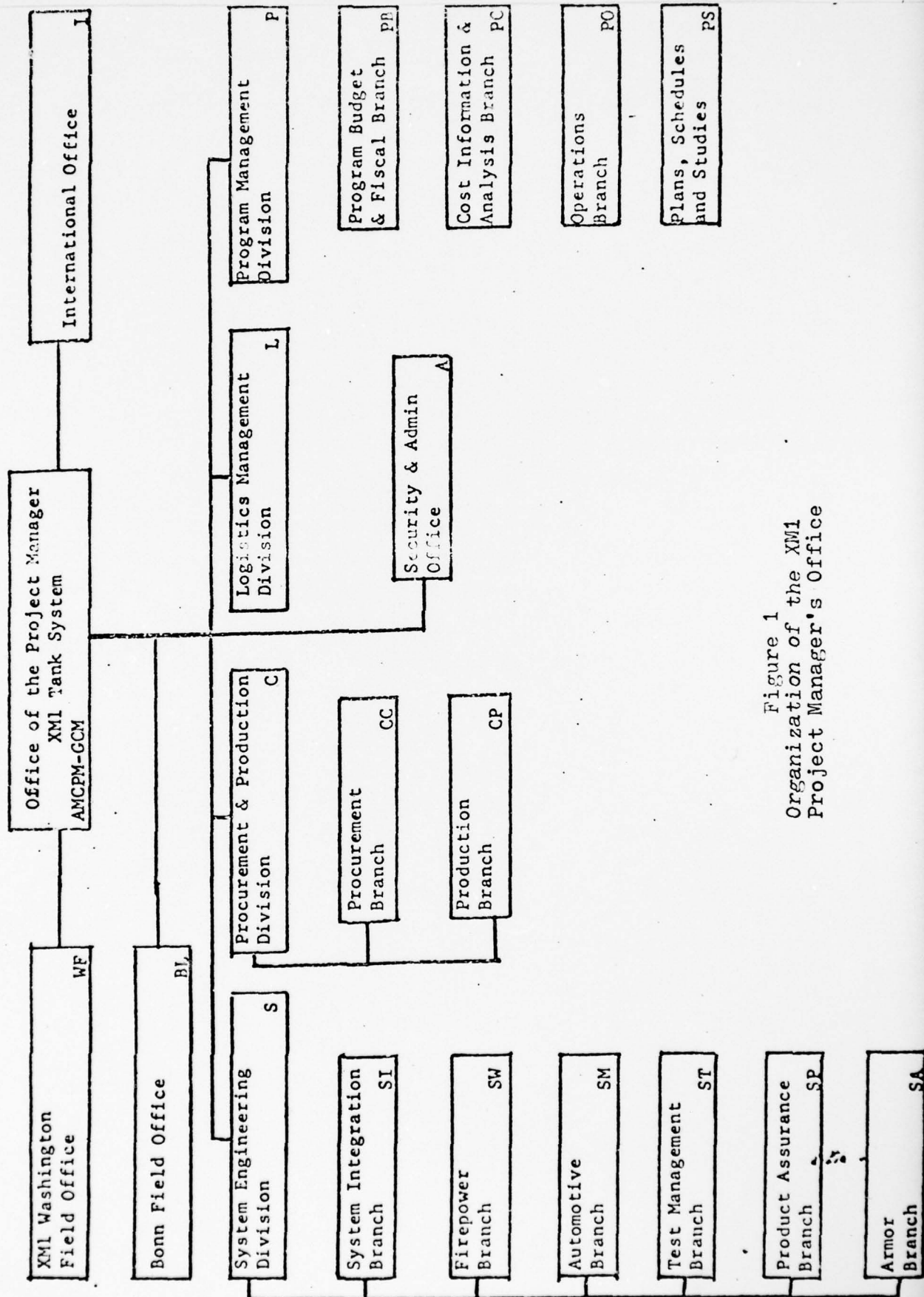


Figure 1
Organization of the XM1
Project Manager's Office

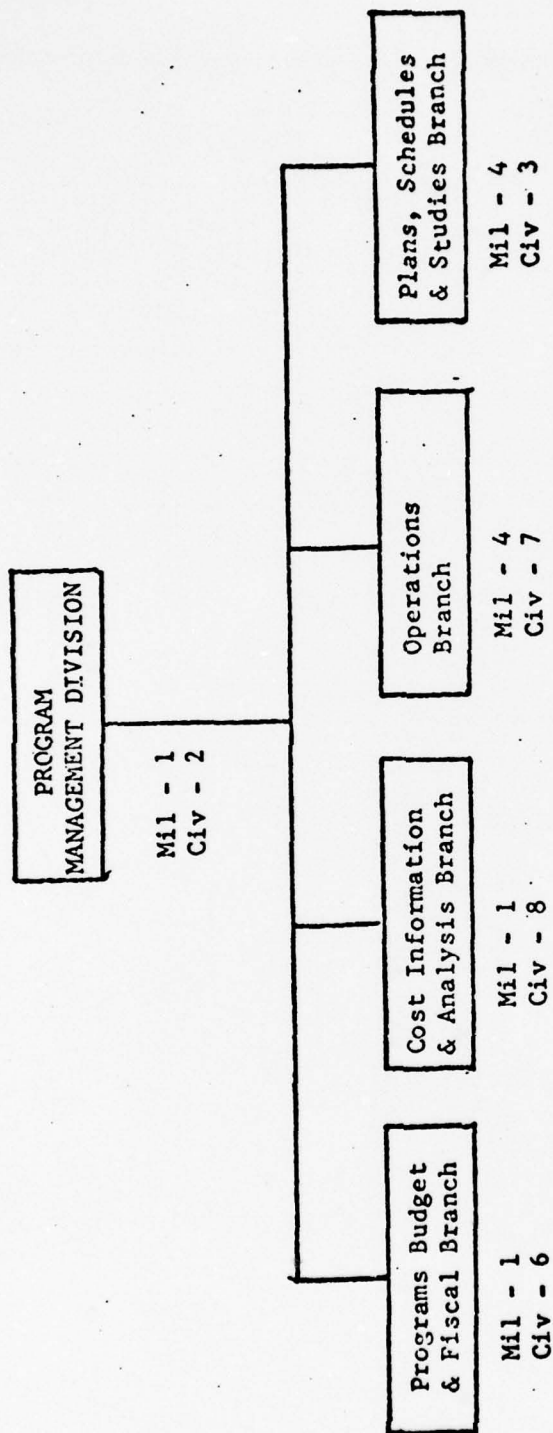
agencies in the Washington area.

The International Office deals with all international matters concerning the XM1, an increasingly important area with the growing likelihood of using German components. It provides staff supervision for the Bonn Field Office, which is the official representative of the XM1 P.M. to the Ministry of Defense of the F.R.G.

The Security and Administrative Office is concerned with the internal security and safeguarding of defense information, and provides the general administrative and records management support needed by the P.M.

At the heart of the P.M.'s office are the four main operating divisions. The Systems Engineering Division is responsible for directing and supervising all technical activities relating to the XM1 tank system. It contains several branches concerned with the various subsystems, systems integration and product assurance. The Procurement and Production Division "directs and controls the planning and execution of the procurement and production of all materiel assigned to the XM1 tank system including the contracting requirements in support of all activities", (20:7-2) and has two branches, Procurement and Production. The Logistics Management Division is concerned with the supply, maintainance and integrated logistic support aspects of the program. (20:9-2)

The Program Management Division (see Fig. 2) is the project control center of the XM1 project. It provides the guidance and control necessary to navigate the project through the systems acquisition process and contains four branches. The Programs,



(ORGANIZATION CHART PROGRAM MANAGEMENT DIVISION)

Figure 2

Budget and Fiscal Branch provides program fiscal and budget services. The Cost Information and Analysis Branch provides the cost estimating and cost analysis, audit and design to unit cost services required by the program. The Operations Branch is the focal point for all current operational matters, including program status reviews and briefings, and it controls the office management information center. The Plans, Schedules and Studies Branch is concerned with future operational matters, and its specific functions are the focus of the next section of this paper.

THE PLANS, SCHEDULES AND STUDIES BRANCH

Under the original organization of the Program Management Division, a single Plans and Operations Branch existed. Certain members of the Branch were concerned with the long range aspects (Plans), others with the short range (Operations). In practice it was found that the people engaged in the long range planning and activities, such as the Development Plan and the Cost and Operational Effectiveness Analysis, were being taken off those projects to help solve the current "crash" problems in the operations area. It was recognized that future planning was an extremely important full-time job for several people, and the project could not afford to have these people periodically removed from their principal tasks. Consequently, in the Autumn of 1975, the Plans and Operations Branch was split into an Operations Branch, concerned with current activities, and a separate Plans, Schedules and Studies Branch.(10)

The Plans, Schedules and Studies Branch is structured with a Lt. Col. Branch Chief, 3 Majors, A GS 14 ORSA specialist, a GS 13, and a secretary.(11) The stated functions of the Branch are as listed in Table 1. They are brief, general and give no hint as to the amount of time and effort involved in each. These functions will now be discussed, in the order listed, with examples of tasks involved in each. The major references for this section are 11 and 20.

The first listed function of the Branch is to "assist the Project Manager by providing short and long range planning data".

Functions:

- a. Assists Project Manager by providing short and long range planning data.
- b. Plans, develops, revises and updates all program schedules except test. Coordinates all schedules.
- c. Coordinates the preparation, revision, and publication of the Development Plan (DP) and effects its distribution.
- d. Maintains program control by establishment and management of program milestones.
- e. Prepares Memoranda for Record of significant meetings with industry and Government authorities as required.
- f. Prepares and maintains program history and coordinates and submits Annual Historical Summary.
- g. Bears primary staff responsibility for the preparation and coordination of the XM1 Decision Coordinating Paper and its updates.
- h. Plans, conducts, or directs special projects as assigned by the Project Manager.
- i. Coordinates the overall preparation and submission of DAPR, DECAP, and other selected reports to higher HQ.
- j. Performs the above functions as applicable to assigned tank main armament development programs, in support of the International Office.
- k. Coordinates all Decision Risk Analysis activities within the Project Office.
- l. Coordinates formal Joint Responsibility Agreements with other Government agencies as necessary.
- m. Coordinates all preparation for ASARC/DSARC presentations including DCP review and update.

Table 1
Functions of the Plans,
Schedules and Studies Branch

Adaquate planning is a key activity in control of a program, and it seemes to take up a large amount of time. Plans, such as the Coordinated Test Plan, Advanced Procurement Plan and others are required for each phase of the acquisition process, and they are constantly being modified as conditions warrant. Updating the plans which go into the Development Plan is a major task. The Branch is involved in tying together alternative long range plans which arise from various contingencies as candidates for future revisions to the Development Plan. Long range logistic planning concerning user tradeoffs and contractor warranties are examples of these plans.

The "Planning, developing revision and updating of all schedules, except test, and the coordination of all schedules", is the next function listed. Proper scheduling of all the inter-related activities which must occur in proper sequence is vital for a successful program, and scheduling is a full-time job for one person in the Branch. The official schedule of the program is kept here and it is tied to the Department of the Army's master milestones. It reflects the schedule shown in the Development Plan, as updated, and lists major review dates as well as all the events within the project. A major internal use of the schedule is in coordination between divisions for inter-related actions. The schedule requires constant revision and updating because of slips and changes in the program. Major impending changes are the possible incorporation of a German 120 mm gun or the licensing to build the German Leopard II AV tank instead of developing the XM1. Either could completely change all schedules.

A large portion of the time required to maintain the master schedule is used to generate alternative schedules in response to "what if" exercises and contingency plans. Questions to the effect of, "If the program funds were increased, or halved, or if a certain activity were cancelled, what would be the impact on the program?" require the generation of new schedules and consume large amounts of time due to the interaction of the various activities affected. One seemingly minor change can affect the entire schedule.

Keeping the Development Plan, the master document for the project, is another activity of the Branch. It is a document about a foot thick and contains nearly all the reports, plans and schedules relating to the project within it, including the Charter, Materiel Need, Decision Coordinating Papers, Coordinated Test Plan, Advanced Procurement Plan and Personnel and Manning Plan, to name a few. It was originally written (except for the Materiel Need and the Charter) by the Plans and Operations Branch, and its maintenance has been assigned to the PS&S Branch which revises it as necessary. In the past three years there have been four major changes. The next revision will be after the source selection decision and will involve incorporation of the approved DCP, a revised schedule and an updating of certain other plans.

The Branch is actively involved in program control by the establishment and management of program milestones. This is closely related to the scheduling function. The schedule control system used was designed by the Branch and its basis is a calendar based chart. The status of each event depicted is supported by a file maintained by the appropriate action officer. The

system is used as a means of tying the short-term plans of the action officer within the project, to the long range plans (i.e. milestones) so that the inter-relationships can be identified and coordinated. (19) The Branch Chief holds monthly meetings with the action officers to check the current status of their plans. If rescheduling is forecast, a statement of impact on the project is required. This system hopes to identify possible changes 90 days in advance so that they can be incorporated with minimum disruption to the program.

The project has not used any PERT-type control system due to the difficulty of applying it to the two competing contractors and the fact that, until recently the Branch Chief and a secretary were the only members of the Branch. With the selection of a single contractor for FSD and the assignment of a GS14 ORSA specialist to the Branch, there is a good possibility that a computer based control system will be developed.

The function of preparing Memoranda of Record of significant meetings with industry and government authorities has been assumed by the Operations Branch, except in one area. If a firm appears at the P.M. office and desires to make known its capability to do studies for the project, with the possibility of its receiving a contract for this at a later date, the Branch Chief deals with it. As a result of their meeting he writes an MFR for the P.M. concerning the firm's capabilities and whether or not it is considered to be qualified to conduct studies for the project.

The coordination and submission to higher headquarters of the Annual Historical Summary occurs once a year. The Summary is

approximately forty-five pages in length, and the major input comes from the various divisions of the P.M.'s office. A running program history is not kept, rather the schedule control system provides a listing of the significant events which have occurred over the preceding year. This is given to the divisions who prepare their portions of the Summary. The PS&S Branch then coordinates these and submits the Annual Historical Summary.

Of utmost importance to the life of the Project is the preparation and updating of the Decision Coordinating Paper (DCP), another responsibility of the PS&S Branch. A DCP is only written in preparation for a DSARC every two or three years, and its preparation is a nearly full-time occupation when it is being written.

A recent DCP preparation consumed nearly two months of the Branch Chief's time, not to mention the time of many others who were writing sections of it.

In practice a "for coordination" draft DCP was written by the Branch, circulated among the interested staff members at DA and OSD, and was then rewritten. The process continued through several iterations and a "for comment" draft was prepared. This draft was then submitted to the Department of the Army Systems Coordinator, who took responsibility for it for final coordination prior to DSARC. After DSARC the DCP will have to be modified to reflect decisions made there. In the case of the XM1, the DCP will have to be revised, probably twice, shortly after it is approved. The DCP for entry into Full Scale Development will reflect the source selection and should be approved in December 1976. Decisions on possible incorporation of the 120 mm German gun and the test

results of the Leopard II will be made in early 1977 and will require modification of the DCP.

The Branch has become involved in several Special Projects, usually by the Branch Chief being designated as chairman of an ad-hoc committee. The projects have generally involved some aspect of long-range planning and had membership from agencies outside the project. A recent example was an ad-hoc committee concerned with the contractor input into site selection for production. The committee contained people from the Production and Procurement Division, the M60 Production Project, and the Tank-Automotive Command. The findings were to be used by Production and Procurement in their plans.

Department of the Army Program Reviews (DAPR's) and Review and Command Assessment of Programs (RECAP's) are major recurring presentations by the P.M. to DA and DARCOM. The PS&S Branch has responsibility for the preparation of these and other selected reports. The DAPR and RECAP are highly structured reviews with formatted Vu-graphs. The Branch gathers the required data from the divisions and formats it properly. A tentative script is written and then the presentation is coordinated with the P.M. It is redone as necessary and finalized. The Branch then coordinates the presentation with DARCOM prior to the DA briefings.

Since the designation of an Assistant P.M. for Tank Main Armament Development, located at Picatinny Arsenal, the PS&S Branch has been relieved of supporting the TMAD program. The Ass't P.M. will draw on the facilities at ARMCOM for his support. However, since the Ass't P.M. is concerned with the development

of a new gun and/or round for the XM1, the PS&S Branch will have to incorporate the plans of the Ass't P.M. into the XM1 Development Plan. Especially close coordination will be required due to the physical distance between the two.

Coordination of the decision risk analysis activities is another function . Through the Branch, four people connected with the project have been school trained at Ft. Lee on various risk analysis models. A cost and schedule risk analysis was done for the project by TACOM, and this provided a basis for major decisions within the project. With increased manning of the Branch, future analyses many be done in-house.

Even though the XM1 project is an aggregate P.M. office, it relies heavily on other agencies for input to and support of the project. Formal statements of the support required from the various agencies are needed, and these Joint Responsibility Agreements are updated annually to reflect the nature of support and the funding required ofr the coming year. The agreements are usually ten to twelve pages in length and detail the support to be provided, tests to be performed, funding requirements, etc. Updating consists of sending proposed changes to the agency concerned, receiving comments, and eventually arriving at a mutual agreement for the coming year. Agreements exist with TACOM, since XM1 is a tenant, Picatinny Arsenal for the support of the Ass't P.M., Aberdeen Proving Ground for the support of the field office there, Ballistics Research Laboratories for ballistic data and research, Human Engineering Laboratories for human factors evaluation, Test and Evaluation Command for test support, and others.

The final, and probably most important function of the Branch listed in the Organization and Functions Regulation is the coordination of all preparation for ASARC/DSARC presentations including DCP review and update. The DSARC is a major milestone in the project and a favorable DSARC recommendation is required for entry into the next development phase. Thorough preparation is absolutely essential and makes the DSARC itself a much easier process.

The Plans, Schedules and Studies Branch is the author of the DCP, as noted earlier, and has the responsibility for coordination of all other activities leading to a DSARC. Required inputs from outside agencies must be obtained, including an updated threat statement from ACSI, the test reports and plans from OTEA, and an updated Cost and Operational Effectiveness Analysis, and fed into the revision of the DP which will be made as the result of a favorable (or unfavorable) DSARC decision. For the XM1, a special modified ASARC/DSARC process was used due to the sensitivity of the test data from competitive prototypes. These modifications, many of which were suggested by the Branch, required a great deal of additional work to prepare for the DSARC.

Obviously, not all of these functions are active at any one time, but it can be seen that there is a great deal of work in the Branch and that it is vital to the success of the program. On a recent day there were a number of items pending on the status board of the Plans, Schedules and Studies Branch, and it is worthwhile to look at them to get a snapshot of the activity in the Branch.

As a result of a recent IG inspection, the War Emergency Plan for the P.M. office is being written by the Branch. It outlines the actions to be taken in the P.M. office during various DEFCON situations. The Branch is also answering a request from DSMC for information concerning the project.

The Branch is writing the plan on how to make the decision concerning the possible acquisition of the Leopard II AV. The tank will be tested after January 1, 1976, and judged by the same standards as the U.S. prototypes. The evaluation of its test results against those of the U.S. competitors is an extremely important, politically sensitive operation.

It was also preparing the quarterly DAPR for the quarter ending in September, and was coordinating the preparation of the Annual Historical Summary which is due by the end of November. The Branch was preparing a policy statement on how each division within the P.M.'s office would write its portion of the Development Plan, which is due to be updated to reflect the DSARC II decisions.

A major current effort is the writing of the organization and implementation plan to set up the XM1 tank production line at the tank plant at Lima, Ohio. A GAO inquiry concerning the selection of Lima as the production site is being answered.

In conjunction with the Logistics Division, the plan for "Handoff" is being written. "Handoff" is the plan whereby new equipment is warranted by the developer for a specific time after delivery to the user, and has major implications in the area of initial support requirements.

The monthly Schedule Control System meeting was due to be

held. Here, possible problem areas were hopefully to be identified before they could adversely impact the program schedule.

The Distribution Plan, which reflects the schedule for issue of production vehicles to the using units, was being rewritten as a result of the schedule slip caused by the failure to enter Full Scale Development in July.

The P.M.'s Charter was actively being rewritten to reflect, among other things, the addition of the Ass't. P.M. for Tank Main Armament Development at Picatinny Arsenal. This will require coordination with the Secretary of the Army's office, because the Charter is signed by the Secretary.

Two interface agreements, or Joint Responsibility Agreements, were being updated. One was with the Tank Automotive Command, and was a large complex agreement since the XM1 project is a tenant organization and draws much of its support from TACOM. The funding and responsibilities for the coming year were laid out in this document. The other was with the Civilian Personnel Office, having to do with the hiring of civilians.

As a result of the P.M.'s recent testimony before the House Armed Services Committee, there resulted 188 questions which were to be answered at a later time, and the Branch has a share of these.

The prime task was planning for the implementation of the source selection decision for FSD, which is due on 17 November.

These recent actions may not be typical of the work at any arbitrary period of time, but they do represent what was occurring in the Branch just prior to entry into Full Scale Development, and they are probably representative of the actions of

similar branches at other projects during a similar time frame.

Major projected actions of the Branch in the near future revolve around the Source Selection decision scheduled for 17 November. While this is not a true DSARC, it will have the same effect as one as far as required actions are concerned. Within three weeks, the Decision Coordinating Paper must be rewritten to reflect the decision and must be signed by the Deputy Secretary of Defense, which will require a significant effort on the part of the Branch. Additionally, formal plans must be written and approved to accomplish the decisions reached in the DCP, and studies must be performed to assess the impact on the program of any changes to previous decisions. The entire program schedule must be redone to reflect the slip which has occurred and to incorporate the detailed schedule of whichever contractor wins the Full Scale Development contract. All existing studies, plans and the Development Plan must then be modified to reflect this new schedule.

In addition to the source selection decision, several other decisions will be made within the next six months. A decision on whether or not to incorporate the German 120 mm gun and other components into the XM1 and the decision whether to build the Leopard II AV in the U.S. in lieu of the XM1 will also be made. Should either of these be affirmative decisions, an entire new round of schedules, plans and decisions will be necessitated, creating a great deal of activity in the Branch.

COMPARISON WITH OTHER P.M. OFFICES

Comparison of the Plans, Schedules and Studies Branch organization of the XM1 office to that of other projects is of interest because it shows the great flexibility allowed within a P.M. office to accomplish the same job. The projects used for comparison were the UTTAS, MICV, M60 Tank Development, and M60 Tank Production. All except M60 Production were organized basically in accordance with the model P.M. office structure set down in AMCR 11-16, Vol. 2, but each was tailored to meet the peculiarities of the individual project. The MICV, for instance, has four designated assistant P.M.s for major facets of the project, in addition to the standard functional divisions. (see app.4) (16:1-2) The M60 Production P.M.'s office is organized differently since it is primarily concerned with tank production, and a major responsibility is control of the Army Tank Plant. (14:1)

Each project, except M60 Production, has a Program Management Division whose missions are roughly comparable and follow the guidelines of AMCR 11-16, Vol. 2:

Responsible to the project manager to plan, schedule, direct coordinate and control the total project program. Exercises the full-line authority of the project manager for the development, submission, justification, receipt, allocation, and execution of all fiscal resources. (2:B-2)

Below the Division level, however, the further structuring is at the discretion of the Project Manager. This is in keeping with the concept of allowing the P.M. flexibility in tailoring his organization to his needs. Each of the projects investigated had significantly different structures within the Project Management Division, and since each project is unique, this would be

expected. Additionally, several other factors probably influence this difference in organization including the personality and management style of the P.M., the magnitude, phase, health and complexity of the program, and the qualifications, rank structure and number of people who staff the Division.

The Organization, Mission and Function Regulation for each project listed similar functions for the Program Management Division of each. (see App. 1-5) In only two cases, the XM1 and UTTAS, was the division formally split into branches and branch functions stated. In the other cases, the functions were listed for the division, but no further structuring was given. As further breakdown is not required, it is not surprising to find it missing. In small offices, there is probably overlapping responsibility, and only as the organization grows is formal structuring likely to be seen. Whether or not it appears in the Organization, Mission and Functions Regulation appears to be up to the discretion of the Project Manager. By not publishing the organization, the division chief can easily change the structure as the situation warrants. It is more difficult to do if the structure is in print.

In each case investigated, there was a formal or informal organization to divide the work within the Program Management Division. Each division chief had separated planning, operating, budgeting and cost analysis in various ways, depending on the nature of the project and the size of the division.

The XM1 Program Management Division has the most explicit formal separation of the division into Cost Information and Analysis Branch, Program, Budget and Fiscal Branch, Operations Branch, and Plans, Schedules and Studies Branch. (see App. 1) Each branch

has its own well-defined responsibilities, but they are inter-related with the other branches, and by being in the same division, coordination is facilitated. This explicit separation is probably only possible in a fairly large project manager's office and is only necessary when the complexity of the project and outside interest result in a high level of activity within each branch.

The UTTAS Project Management Division is formally divided into a Program/Budget Branch and a Cost Analysis Branch. (see App.2) The Program/Budget Branch has been further divided into three areas of Planning, Review and Analysis, and Budgeting. Combining these functions into a branch facilitates coordination among them. The branch has only five personnel assigned, of whom one is committed solely to the planning and operations function and another to the review and analysis function. The Division Chief has not found it necessary to separate plans from operations; the same person does both. (9) Taken together, this one person's duties correspond to those of the Plans, Schedules and Studies Branch and the Operations Branch of the XML. The UTTAS project manager's office is smaller than that of the XML, so combining of the functions is probably necessary. Additionally, the project doesn't seem to attract as much unwanted attention as some others, so the work load probably isn't excessive. In preparation for major milestones, however, it would appear that the personnel of the Division will work long hours.

The MICV Program Management Division's separation is not reflected in its Organizations and Functions Memorandum, but

it has three branches; Plans and Operations, Programs and Fiscal Resources, and Cost Information Analysis. (see App. 4) (15) Here, planning and current operations are handled by the same branch, although, due to the nature of the division's responsibilities, there is interplay between all three branches. There is probably more interplay than intended since the Plans and Operations Branch has only three of its six authorized spaces presently filled.(15) The organization also is a logical one since it separates the Division's functions into three distinct areas. The break-point between operations and planning is ill-defined, and the need for a clear separation apparently hasn't been felt or isn't feasible due to lack of manpower currently available.

The Program Management Division of the M60 Tank Dev. Project (see App.3) is informally divided into three branches: Programming, Procurement and Resource Analysis. In this case, the Programming Branch handles the planning and operations functions. No distinction is made between the planning and operations functions, although the branch is sufficiently staffed to do so if it were felt to be necessary. (17)

The M60 Tank Production Project Manager's office is organized considerably differently, (see App.5) and this is due to the fact that this project was set up to accelerate production and rebuild rates of an existing system. Its focus is different and its organization does not conform to the model in AMCR 11-16, Vol.2. The project was created as a separate entity after the 1973 Mid-East War when our low tank production capacity became evident, and it was tailored for a particular task. It is probably

only a temporary P.M. office, and will soon be reabsorbed by the M60 Tank Development Project. The Systems Management Information Office conducts all Operations and Planning functions for the project, while the Program Management Branch of the Operations Division is concerned with the budget functions. (1)

In each case different organizational structures exist for the planning function. Each is presumably effective or it would be changed, since except for limited manpower, there are no external restraints on the form of the branches. This variety of effective structures speaks well for the flexibility that has been built into the system, and one can only conclude that in each case the organization is right for its particular project.

POSSIBLE CHANGES FOR THE FUTURE

In comparing the Plans, Schedules and Studies Branch of the XM1 Project with corresponding organizations in other projects and with the model organization in AMCR 11-16, Vol.2, it becomes obvious that the XM1 Project has a very good organizational structure. All of the projects investigated performed the functions listed in AMCR 11-16, Vol. 2 for the Program Management Division, but the XM1 Organization and Functions Regulation explicitly fixed responsibility in each of the four major areas of concern within an individual Branch. This seems to be the most logical and detailed formal organization of any of the projects, and without knowledge of the P.M.'s management style, and first-hand knowledge of the personnel in the division, the author could not recommend any change in the organization.

The planning function seems to be well fixed in the Plans, Schedules and Studies Branch. All plans are made or coordinated there, and this is the Branch's single main task. Other projects combine operations (current) and plans (future) or plans and budgets which would seem to de-emphasize the vital importance of good planning. In a combined Branch, the pressure of other duties may cause planning not to get the attention it deserves.

All aspects of the planning function are well covered in the XM1 Plans, Schedules and Studies Branch, and with the decisions which will be made in the next six months having major influence on the plans to be made, the author sees no change of role for the Branch. The planning function currently appears well under

control, and there will not be time to take on new responsibilities in the next year.

CONCLUSIONS AND RECOMMENDATIONS

This paper has outlined in some detail the actual functioning of the Plans, Schedules and Studies Branch of the Program Management Division of the XM1 Project Manager's Office. In comparing it with other Project Manager's offices, a preliminary evaluation was made that it has an effective organization for managing the planning aspects of the project and seems to be organized in greater detail than the other projects considered. No reorganization or change of role seems warranted at this time.

The main value of this paper has been to educate the author in the actual functioning of the Plans, Schedules and Studies Branch, his next assignment. While the Organization and Functions Regulation lists functions, the actions involved in carrying out those functions, the nature of the reports generated, the activities and time involved were not available and could only be learned through a study such as this. Because of this investigation, the author hopes to become productive in his new job in much less time than if he arrived without this preparation.

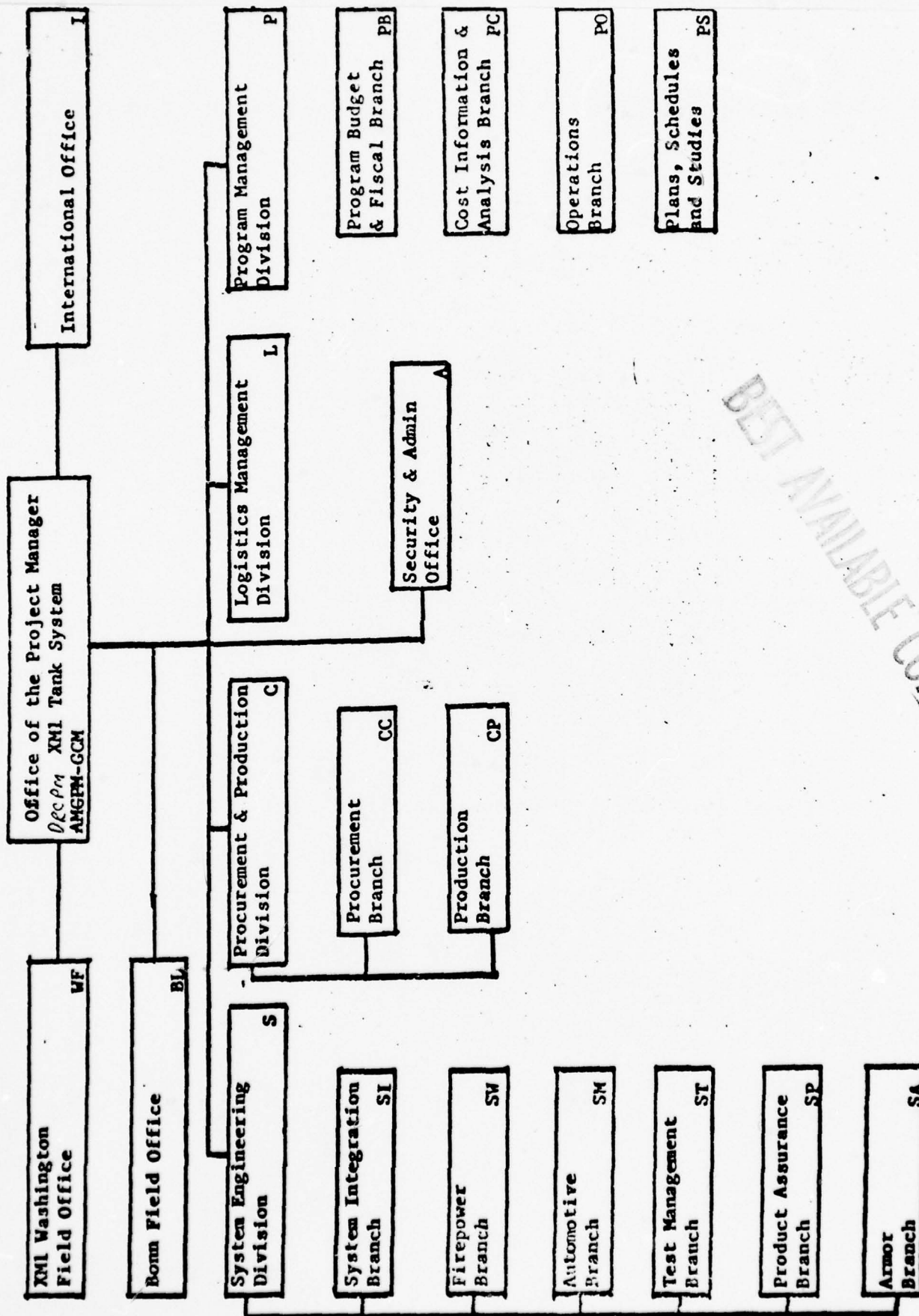
The other value of this paper is to assist others without experience in Project Management to understand the activities and functions of a portion of the Program Management Division. The organization of the Plans, Schedules and Studies Branch is unique, but the functions and the activities that it performs are common to all projects, and therefore this paper should have some value to anyone who is interested in the field.

The author recommends that a series of studies be done,

similar to this, although not necessarily at the branch level, for all the divisions within a typical Project Manager's office. While regulations and directives exist outlining the functions of each division, there apparently exists no guide as to what the functions actually translate into in terms of reports, requirements, time, work and activity involved and interface actions. Such guides would be invaluable aids to a newcomer to the field of project management to help him become familiar with exactly what "Project Management" really involves, and would be major assets to the DSMC curriculum.

APPENDIX 1

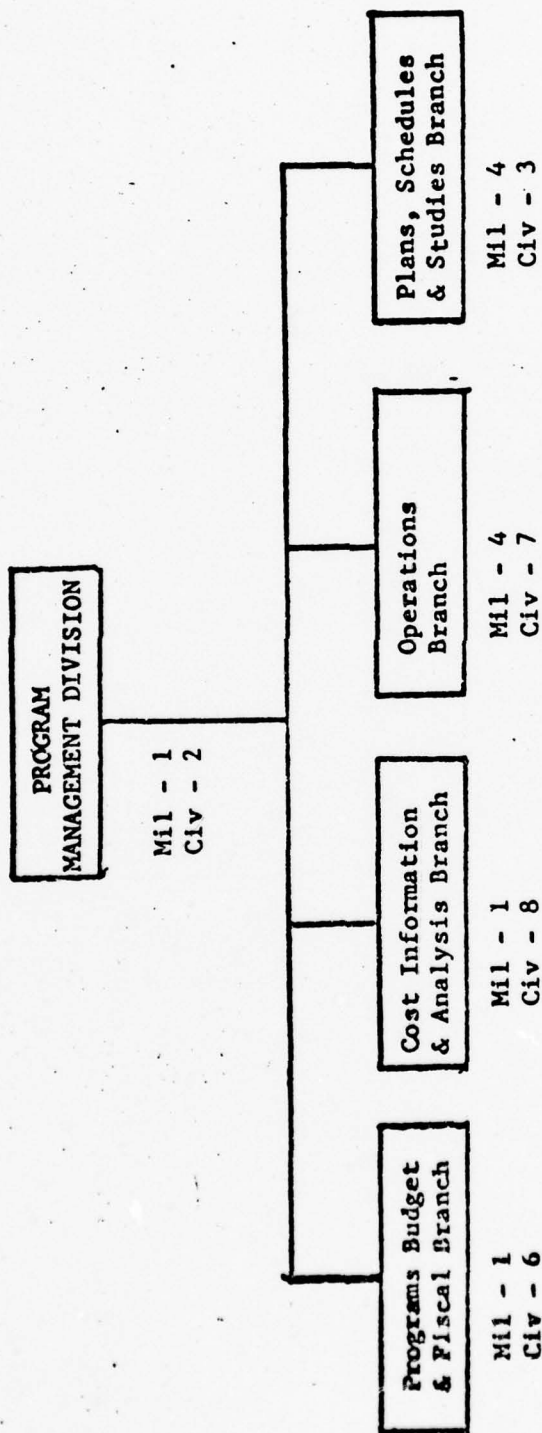
Extract from XM1 Organization and Functions Regulation



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XM1 Reg 10-2



(ORGANIZATION CHART PROGRAM MANAGEMENT DIVISION)

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CHAPTER 6

PROGRAM MANAGEMENT DIVISION

6-1. Chief, Program Management Division. The mission of the Chief, Program Management Division is to:

- a. Provide program, fiscal and budget services.
- b. Provide cost estimating and cost analysis services.
- c. Provide a review and analysis system.
- d. Provide focal point for all matters pertaining to short and long range planning data and current operational matters.
- e. Provide for development and implementation of overall program management control systems and techniques.

6-2. Program, Budget and Fiscal Branch

Functions:

- a. Plans, coordinates, prepares, presents, and justifies program and operating budget estimates, and revisions thereof, assuring conformity with directives of AMC and higher authority.
- b. Maintains contact with all parties necessary to insure proper input for budget and program purposes, including the International Office for input on international programs.
- c. Maintains all official budget type data for Project Manager.
- d. Prepares, coordinates and issues current and prior year documents, defining detailed RDT&E and PEMA Programs and fund breakdown (1006's, 1006c's and Form 26) into each AMC performing segment.
- e. Evaluates rate of obligations and expenditures for allocated funds.
- f. Reviews reports received from AMC Command elements.
- g. Develops, prepares and coordinates all official program and budget reports and special reports pertaining to RDT&E, PEMA and O&MA and MCA.
- h. Analyzes operating budget requirements with a view toward determining shortfalls and potential cost growth.

i. Determines if RDT&E funds are being expended in accordance with incremental funding regulations/policies.

j. Performs overall analysis of current year programs to assure continuing effort against available funds and incorporate results of such analysis into subsequent year's program.

k. Prepares, updates and furnishes current year operating budget and program data for RDT&E, PEMA and O&MA required in the DP.

l. Utilizes Cost Performance Reports (CPR) from contractor and in-house activities in overall funding analysis to determine funding requirements resulting from any overruns/underruns.

m. Implements and maintains application of AMC Command Management System.

n. Prepares, justifies and submits official requests for additional funds, impact statements of deferments, withdrawals and other transactions involving funds.

o. Analyzes requirements for reprogramming actions to assure best utilization of available funds in relation to schedules and program needs.

p. Analyzes, interprets and implements higher authority fiscal program and policies.

q. Prepares and updates RDT&E Research and Technology Resume' (DE 1A98).

r. Assists in preparation of reviews and furnishes guidance concerning portion of Army Materiel Plan which pertains to assigned programs.

s. Coordinates the preparation and insures the timely submission of Project Exhibits, P15 (Provisions of Industrial Facilities (PIF)), P16 (Manufacturing Methods and Technology (M&T)), P17 (Layaway and Redistribution of Industrial Facilities), P19 (Description of Code B Items), P20 (Summary Item Readiness Study), P21 (Production Schedules) and P22 (Unit Price Analysis).

t. Maintains program requirements thru direct input to SAMPAM/AMP/FYDP.

u. Assists other installations by furnishing O&MA guidance and coordinating their requirements for funds, assuring adequacy of requirements and justification as applicable to assigned funds.

v. Performs the above functions as applicable to assigned tank main armament development programs, in support of the International Office.

w. Performs the above functions as applicable to the international development program, in support of the International Office. *Assistant Project Manager for Tank Main Armament Development.*

x. Prepares and updates RDT&E Program Data sheets (AMC Forms 1534R, 1701R, 1935R).

y. Prepares input for FEMA automated Procurement Work Directive (AMC Form 1095) for TWOS system. Prepares manual AMC Form 1095, when required by short-time emergency.

6-3. Cost Information and Analysis Branch

Functions:

a. Develops and implements guidelines and controls for the Design to Unit Cost Program for the XM1 contractors.

b. Performs validation audits at the contractors and major sub-contractors on each DTUC report.

c. Performs an evaluation of the technical performance as it impacts DTUC.

d. Reviews the contractors' production processes and validates the costing rationale.

e. Develops and maintains control of de-escalation procedures for converting current estimates to FY72 base year dollars.

f. Prescribes and evaluates the DTUC Award Fee.

g. Develops the specific guidelines and performs the validation audit of the Leopard 2 (AV) DTUC.

h. Reviews and validates the contractors' Production Base Support and Tooling requirements in terms of cost estimates and the economic analysis of the requirements.

i. Performs validation reviews of the contractors' designated Trade-offs, Cost Reductions/Productibility Studies, and Make/Buy decisions.

j. Performs Readiness and Implementation Reviews of Cost/Schedule Control Systems Criteria (C/SCSC) at the contractors.

k. Directs DCAS and DCAA in monthly Surveillance Audits of the contractors. Provides guidelines and direction, and assists in their implementation.

l. Performs quarterly on-site surveillance audits of the contractors.

m. Performs a monthly Cost Performance Report Review and Analysis of schedule and cost variations and briefs the Project Manager with an independent evaluation of the variance analysis.

n. Performs validation reviews of the contractors' Estimates at Completion (EAC).

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XM1 Reg 10-2

o. Performs a review and analysis of the contractors' Technical Performance vs. Cost Performance Reports.

p. Performs cost control and cost tracking of all elements of the program cost.

q. Prepares Selected Acquisition Reports (SARs) and defends it in a DA staff review held at AMC.

r. Reviews and validates revised program cost estimates.

s. Develops and furnishes cost summaries and analysis to Congressional Staffers, DOD, DA, AMC and other agencies.

t. Provides cost summaries and rationale to GAO, AA and DCAA audit reviews.

u. Provides cost input and analysis to RECAP and DAPR.

v. Prepares cost material and briefs all levels of visitors and to higher headquarters including AMC, DA and DOD.

w. Develops techniques for cost estimating and analyzing Life Cycle Cost Estimates (LCCE); including research and development, producibility, engineering and planning (FEP), and operating costs.

x. Develops and furnishes LCCE and other cost estimates to DOD, DA, AMC, AMC Commodity Commands and private contractors as required.

y. Validates cost data emanating from the field or higher echelon on related programs.

z. Develops cost estimating methodologies and other statistical techniques for estimating costs for tanks and other related equipment.

aa. Reviews cost estimates for consistency and validity. Continuously updates assumptions, progress (learning) curves, and cost factors.

bb. Reviews a focal point for coordination of all Tank System cost information provided to all echelons of government.

cc. Develops manual and mechanized cost models for properly displaying LCCEs and cost comparison studies.

dd. Provides input to Cost and Operational Effectiveness Analysis (COEA).

ee. Provides data and performs analysis in support of foreign tank cost comparisons.

6-1. Operations Branch

Functions:

a. Establishes and maintains an active working relationship and coordination with AMC, DA and OSD staff elements direct and through the Washington Field Office which has authority to speak for the Project Manager.

b. Serves as a focal point for all current operations matters.

c. Coordinates all activities relating to briefings, demonstrations, visits by dignitaries and visits to contractors.

d. Coordinates overall scheduling, preparation, and conduct of all program status reviews and briefings to include audio/visual aids requirements and necessary follow-up actions.

e. Maintains a chronological table of significant events for the Project Manager.

f. Prepares Memoranda for Record of significant meetings with industry and Government authorities as required.

g. Provides, as required, status reports, fact sheets, and information on progress of the XM1 Tank System/Program to Government officials both locally and in the Washington area.

h. Plans, conducts, or directs special projects as assigned by the Project Manager.

i. Monitors news releases and maintains file of pertinent articles.

j. Serves as the focal point in providing program data and related assistance in the form of explanation and interpretation for the use of the General Accounting Office (GAO), Congressional Committees, US Army Audit Agency (USAAA), DA/AMC Inspectors General, and other agencies involved in reviewing, evaluating, and inspecting the program.

k. Coordinates and assigns the responsibilities for preparation of replies to reports and queries which are not routine and advises HQ, AMC of information provided.

l. Performs the above functions as applicable to assigned tank main armament development programs, in support of the International Office.

m. Maintains and controls the master file of briefing material and the vu-graph library for the Project Office.

n. Provides immediate visual information services and coordinates such services requested from supporting agencies.

✓ o. Establishes and operates the project office management information center to portray current and estimated costs, schedules, and technical program progress including potential problem areas.

6-5. Plans, Schedules and Studies Branch

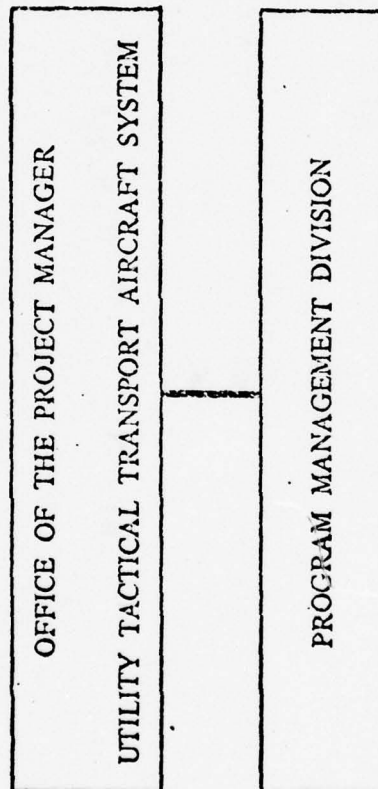
Functions:

- a. Assists Project Manager by providing short and long range planning data.
- b. Plans, develops, revises and updates all program schedules except test. Coordinates all schedules.
- c. Coordinates the preparation, revision, and publication of the Development Plan (DP) and effects its distribution.
- d. Maintains program control by establishment and management of program milestones.
- e. Prepares Memoranda for Record of significant meetings with industry and Government authorities as required.
- f. Prepares and maintains program history and coordinates and submits Annual Historical Summary.
- g. Bears primary staff responsibility for the preparation and coordination of the XM1 Decision Coordinating Paper and its updates.
- h. Plans, conducts, or directs special projects as assigned by the Project Manager.
- i. Coordinates the overall preparation and submission of DAPR, RECAP, and other selected reports to higher HQ.
- j. Performs the above functions as applicable to assigned tank main armament development programs, in support of the International Office.
- k. Coordinates all Decision Risk Analysis activities within the Project Office.
- l. Coordinates formal Joint Responsibility Agreements with other Government agencies as necessary.
- m. Coordinates all preparation for ASARC/DSARC presentations including DCP review and update.

APPENDIX 2

Extract from UTTAS Organization and Functions Regulation

SECTION III



SECTION IIIPROJECT MANAGER, UTILITY TACTICAL TRANSPORT AIRCRAFT SYSTEMPROGRAM MANAGEMENT DIVISIONMISSION

Responsible to the Project Manager to plan, schedule, direct, coordinate and control the total Project. Exercises the full-line authority of the Project Manager for the development, submission, justification, receipt, allocation and execution of all fiscal resources. The Program Management Division is the focal point for staff advice and coordination on all matters pertaining to budget and fiscal activities, consolidated cost estimating, programming, planning, scheduling, utilization of modern management tools, reviews and analysis, and the designated management reporting requirements. In these areas provides policies and directives to internal organizational elements and appropriate AMC Major Subordinate Command (MSC) functional elements and participating organizations supporting the Project Office.

FUNCTIONSA. Program/Budget Branch:

1. Utilizing the detailed programming and fiscal information developed by internal and external supporting elements, has the responsibility to:
 - a. Review DOD, DA, and other services' policy directives in order to initiate, or recommend changes to, and coordinate project office policies and procedures.
 - b. Analyze the Force Structure Program, DA projects and other services' projects. Subsequently, correlate and direct the development of short, medium, and long range objectives and plans, in coordination with DA, DOD, and other services which identify requirements for the total U.S. Weapons System.
 - c. Establish, recommend, and provide management direction over the RDT&E, PEMA (APA), O&MA, MCA and ASF programs and budgets to insure efficient execution of all UTTAS programs and budgetary requirements. These activities include but are not necessarily limited to establishing recommended priorities within dollar limitation, and monitoring resources, expenditures through the use of Cost/Schedule Control System (C/SCS) methodology. As required, prepares justification for reclama action or requests supplemental funding.

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d. Prepare, submit and defend the AMP, PEMA (APA) Budget Exhibits, R&D Budget Forms, MCA requirement and back-up data for apportionment hearings of the RDT&E, PEMA (APA), and MCA programs. Expedite schedules, re-orient programs and accomplish reprogramming or justify additional funds as required for presentation to appropriate AMC Staff elements, DA, DOD, OMB, and the Congress.

e. Direct the release and commitment of appropriate funds and obligational authority in accordance with planned schedules and resources availability.

f. Establish program and planning objectives and milestones for receipt of input data requested from applicable agencies within the Department of Defense, and/or civilian contractors, thereafter utilizing selected management techniques to insure consistency with DA and DOD policy directives. In this regard, establish procedures which will ensure program compliance and adherence to approval concepts and doctrine.

g. Prepare, maintain and update the Decision Coordinating Paper (DCP), Development Plan (DP), Project Work Breakdown Structure (FWBS), Program Change Request (PCR), (FYDP) for RDT&E, PEMA (APA), O&MA, MCA, and ASF, detailed phasing of milestones, and cost and related goals. Review and coordinate the Project Manager's inputs to the Program Objective Memoranda (POM).

h. Develop, maintain, and update appropriate recurring reports such as:

- Department of Army Program Report (DAPR),
- DA Management Review and Improvement Program (DAMRIP),
- DA Milestone Reports,
- Reports required by DOD and others as required,
- Assures that data in all reports is consistent with established program directives and scheduling plans,
- Review and Command Assessment of Projects (RECAP).

i. Plan, supervise, and coordinate operating schedules and the conduct of ASARC/DSARC Programs.

j. Continually review funding status of procurement actions, i.e., Procurement Work Directives (PWD's), Military Interdepartmental Requests (MIRPR's), Work Orders, Engineering Change Proposals, (ECP's), etc., to insure compatibility with budget programs. When delays are encountered in any of the processing phases, investigate to determine impact on budget programs and take corrective actions.

- k. Review all ECP's and VECP's to determine impact on planning schedules and/or funding.
- l. Conduct continuing program management review and analysis to determine program status, identify potential problems, and to provide guidance and recommendations as necessary to resolve those problems.
- m. Plan, develop and coordinate all RECAP, Project Status Reviews, and similar reviews and presentations.
- n. Participate in the preparation and monitor emergency plans, Continuity of Operations Plans (COOP), Defense Readiness Plans (DEFCON), and transition plans. Recommend any functional or organization realignment required to increase the operational effectiveness of the organization. Participate in the preparation and justification of the TDA and the Organization Mission and Functions Manual.
- o. Provide guidance and direction as well as prepare reports for the US Zero Defects.
- p. Conduct continuing review of Congressional records, studies, and activities as pertinent to the UTTAS Program.
- B. Cost Analysis Branch:
 - 1. Has the responsibility to:
 - a. Establish program and planning objectives and milestones for receipt of input data requested from applicable agencies within the Department of Defense, and/or civilian contractors, thereafter utilizing selected management techniques to insure consistency with DA and DOD policy directives. In this regard, establish procedures which will ensure program compliance and adherence to approved concepts and doctrine.
 - b. Prepare, maintain, and update the Selected Acquisition Report (SAR) and evaluate, coordinate and maintain the status of all programs and projects for UTTAS by evaluation and analysis of C/SCS reports.
 - c. Review all ECP's and VECP's to determine impact on planning schedules and/or funding.
 - d. Prepare, maintain, and update the Life Cycle Management/Cost Model.
 - e. Provide guidance and approve independent government cost estimates, economic analyses, cost trail of baseline, Cost Performance Report analysis, risk and trade-of analyses, and cost studies for the UTTAS. In addition,

Monitor the Army Studies Program to identify studies of potential value to or of special interest to the Project Manager and maintain detailed knowledge of the objectives, contents, progress and results of such studies.

f. Perform complete life cycle cost tracking. The cost tracking includes maintenance of records of successive cost estimates, together with reasons for changes in their estimates.

g. Develop cost models which provide the expected variance in cost estimates, thus providing the Project Manager with a prior visibility regarding potential cost growth.

h. Perform economic analyses of proposal investments, including discounting and present value techniques, as required.

i. Define and coordinate the planning effort for developing the criteria to be incorporated in contractual documents which establish contractor preparation requirements for providing specific cost, schedule and technical performance C/SCS data, project summary work breakdown structure extensions, development and employment of LOB or equivalent, Make-or-Buy Policy, etc.

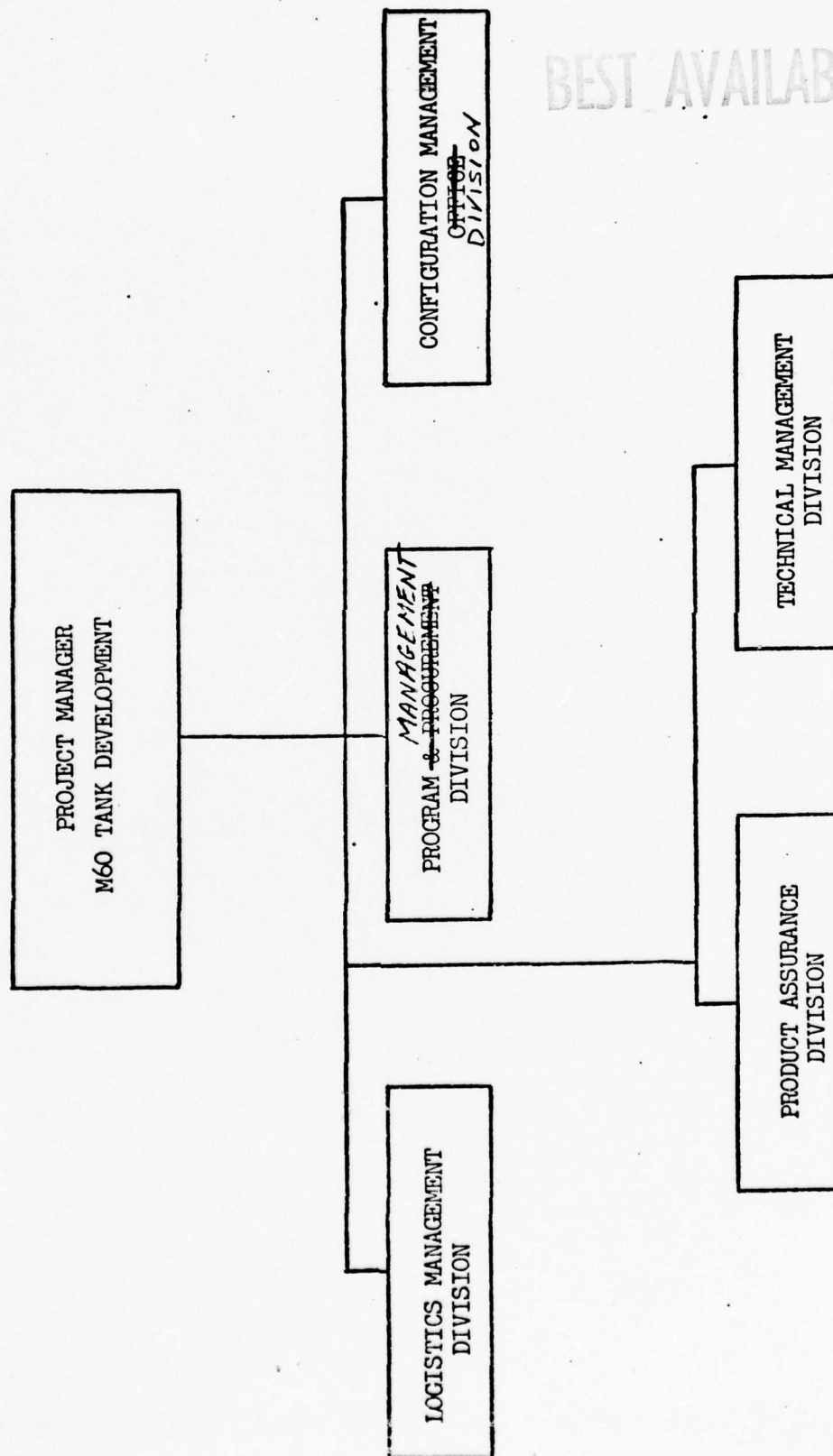
j. The Cost Analysis Branch in accordance with C/SCS procedures, performs analysis including but not limited to, establishing the status of performance of cognizant activities based on reported performance information as analyzed by UTTAS PM division elements. Determine value of this performance in comparison to cost claimed, initially planned costs and provides projected cost with all impacts considered; in regards to schedule accomplished, compares to schedule planned and projects future schedule with all impacts considered. Recommends optimum approaches resulting from these determinations.

k. Conduct Decision Risk Analysis on the various engineering approaches to solve design problems.

APPENDIX 3

Extract from M60 Tank Development Project Organization
and Functions Regulation

U. S. ARMY TANK-AUTOMOTIVE MATERIEL READINESS COMMAND



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U. S. ARMY TANK-AUTOMOTIVE MATERIEL READINESS COMMAND

PROJECT MANAGER M60 TANK DEVELOPMENT

PROGRAM MANAGEMENT
DIVISION

PROJECT MANAGER M60 TANK DEVELOPMENT

PROGRAM MANAGEMENT DIVISION

MISSION:

Plan, schedule, direct, and coordinate program management and/or procurement activities financed under the RDTE/PEMA/OMA appropriations. Plan, develop, direct, and coordinate M60TD staff and operating requirements. In these areas, provide policies and direction to internal organizational elements; and initiate management techniques necessary to exercise effective program control, assure adequate review and analysis, and provide the program visibility necessary to permit systematic and effective management decisions. Exercise the full-line authority of the Project Manager for the development, justification, submission, decrement, receipt, allocation, execution, and contractual control of all resources allocated and available for mission accomplishment.

FUNCTIONS:

1. Provides staff guidance and assistance and coordinates all matters pertaining to programming, budgeting, program decrements, incremental funding, fiscal activities, cost estimating, cost control, scheduling, review and analysis, and management reporting requirements pertaining to the RDTE/PEMA/OMA appropriations financing the M60 Tank Development programs.
2. Reviews DOD, DA, DARCOM, and TARCOM policy directives; implements or provides guidance as appropriate; and develops, coordinates project office policies and procedures.
3. Develops short, medium, and long-range program and budgetary plans for submission to higher headquarters; and implements the fiscal year program applicable to assigned M60 Tank development programs.
4. Establishes, recommends, and provides management direction of RDTE, plus segments of PEMA, OMA, and ASF programs; and develops budgets and plans to insure efficient program execution.
5. Develops plans, provides guidance, and analyzes program impact resulting from program decrements and incremental funding actions.
6. Performs program interchange; provides input to the Army Materiel Plan; prepares, submits, and defends the RDTE Budget; and assists in the development and participates in the defense of the PEMA program during OSD/OMB budget and apportionment hearings, as required.

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PROJECT MANAGER M60 TANK DEVELOPMENT

7. Develops cost estimates and projected dollar requirements for pay of authorized civilian personnel, mission travel, and other operating expenses; and prepares and submits Command Operating budgets relative thereto.
8. Receives, controls, accounts for and reports on RDTE, PEMA, and OMA program authorized for mission accomplishment.
9. Prepares and issues procurement work directives to supporting activities to accomplish the required scope of work and prescribes and monitors the development of specific and definable work packages relative thereto.
10. Accomplishes a continuing evaluation of programs and initiates Program Change Requests or recommends reprogramming actions, as required.
11. Assures the commitment and obligation of appropriate funds in accordance with planned schedules and resource availability.
12. Maintains a current status of program authority, commitments, obligations, forecasts of obligations.
13. Prepares and assures processing of Advance Procurement Plans and Determination and Findings to higher authority for final approval.
14. Directs and/or recommends action to expand, reduce, stretchout, or terminate contracts based on changing higher headquarters or project requirements.
15. Reviews and evaluates contractor proposals and establishes position on reasonableness and adequacy of proposals; participates in pre-award surveys.
16. Coordinates or recommends courses of action on contractor requests for the performance of overtime, additional services, or changes in operational or contractual scope.
17. Reviews and assures that the contractor receives adequate support for activities involving government-furnished equipment.
18. Reviews Contract Data Item input and establishes and chairs the Data Item Scrubdown meeting for contractual input.
19. Initiates direction to all M60 divisions, TARCOM directorates, other commands and agencies to insure the timely receipt of contractual input (i.e., Scope of Work, IGCE, DD Form 154, Security Requirements, etc).
20. Monitors and participates in the planning of pre-production schedules and testing, as required.

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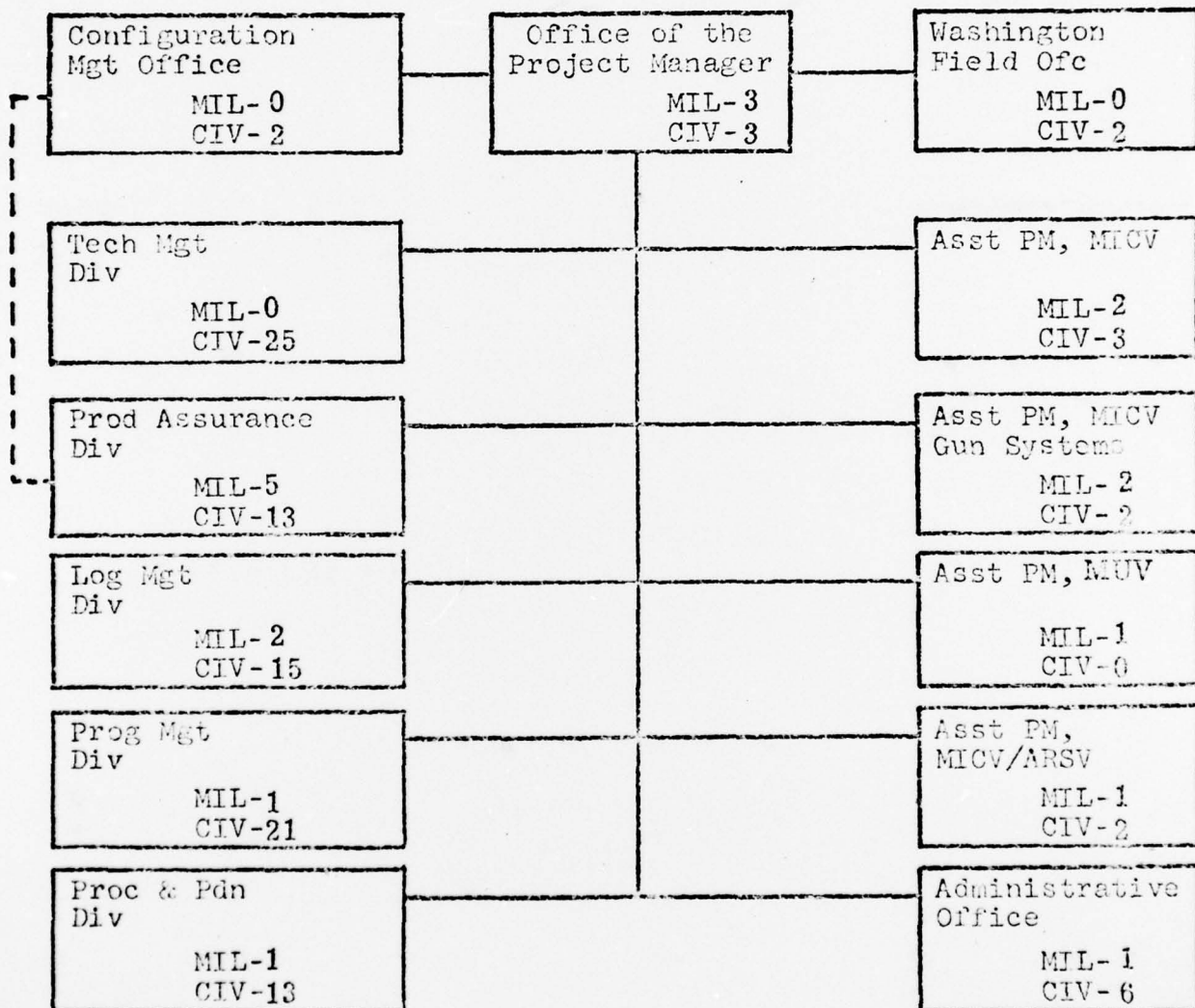
PROJECT MANAGER M60 TANK DEVELOPMENT

21. Provides specific planning information and direction to performing agencies and reviews and approves plans relative thereto.
22. Establishes and maintains the program execution plan and in-process review schedules for review and evaluation of accomplishment of objectives, status of planned programs, adequacy of programs and identification of slippage and overruns utilizing review and analysis management tools such as Program Evaluation and Review Technique (PERT), production leadtime charts, and the requirements of Cost/Schedule Control System Criteria, etc., as appropriate.
23. Coordinates and serves as the point of contract for internal review and external audit activities.
24. Serves as the custodian for all SECRET documents required and maintained by the Project Manager.
25. Renders a variety of recurring and special one-time reports and controls report submission for the office.
26. Participates in or chairs appropriate planning sessions called to resolve complex programming, scheduling, and funding problems necessary to attain program objectives.
27. Coordinates all cost estimating activities within M60TD; acts as focal point for all cost and economic analysis activities.
28. Responsible for coordination of Award Fee evaluations.
29. Monitors the status of contractor's open proposals.

APPENDIX 4

Extract from MICVS Organization and Functions Memorandum

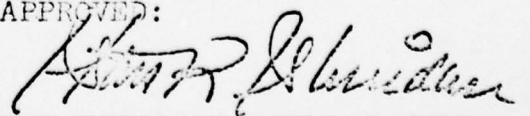
PROJECT MANAGER
MECHANIZED INFANTRY COMBAT VEHICLE SYSTEMS



Total Strength

MIL	19
CIV	107
	<u>126</u>

APPROVED:



STAN R. SHERIDAN
Brigadier General, USA
Project Manager, MICV Systems
25 November 1975

CHAPTER 11

PROGRAM MANAGEMENT DIVISION

11-1. Mission.

- a. Plans, schedules, directs, coordinates and controls all aspects of the program management system.
- b. Exercises full line authority of the Project Manager for the development, submission, justification, allocation and execution of all financial resources, including provisions of fiscal and budget services.
- c. Provides a review and analysis system.
- d. Provides cost estimating and cost analysis service.

11-2. Functions.

- a. Develops and manages the MICVS program management system and its related functions as they pertain to program planning, program evaluation and financial management, and the Development Plans for each program/budget element.
- b. Develops policies and procedures for budget formulation, justification, including defense to higher authority, execution and administration.
- c. Plans and develops MICVS input to AMC and higher authority for the Five-Year Defense Program, the Army Materiel Plan and mobilization plans as required. Insures coordination with other services regarding effort related to XM714 fuze.
- d. Establishes program breakout for all elements, selects sources for elements of the program, effects distribution of program and funds, and establishes schedules and lead times to meet the total program objective.
- e. Issues guidance to all supporting and subordinate sources and integrates their requirements into the operating program and budget.
- f. Maintains a current status of obligations, forecasts of obligations and unliquidated obligations.

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g. Develops and maintains time/cost trends for future planning and analysis.

h. Maintains cognizance of all financial aspects which might have a significant impact on objectives and identifies areas for required corrective action.

i. Provides specific planning information and direction to performing agencies and reviews and approves plans from performing agencies.

j. Determines availability of program authority, approves and issues project orders, intra-Army orders, and procurement/work directive to supporting organizations.

k. Accomplishes appropriate reprogramming actions, program changes, and program adjustments, and continuously reviews forecasted obligations, deliveries, and costs to see that forecasts are valid.

l. Prepares, justifies and submits official requests for additional funds, impact statement of deferments, withdrawals and other transactions involving funds.

m. Determines if RDT&E funds are being expended in accordance with incremental funding regulations/policies.

n. Utilizes CPR reports from the contractor in overall funding analysis to determine funding requirements resulting from over-runs/under-runs.

o. Plans, prepares, executes and maintains a continuing program of review and analysis of current progress and effectiveness of program activities accomplished in relation to program objectives, budgeting and cost limitations, schedules and scope of work.

p. Maintains liaison with higher authority and performing agencies to assure coordination and timely submission of all information necessary for effective review and analysis.

q. Establishes and maintains a contractor performance measurement system in areas of cost and schedule.

r. Monitors and analyzes the variances between the amount of work planned and accomplished and between the amount of work accomplished.

s. Provides a focal point for coordination of all MICVS cost information provided to all echelons of the DoD.

t. Prepares life cycle cost data for DCP, AMP program and budget.

u. Insures that cost/schedule control system criteria will be implemented by the contractor.

v. Directs, develops and coordinates methods of cost reporting and analysis to include life cycle cost, contract cost analysis, cost projects and independent Government estimates.

w. In accordance with C/SCSC procedures, performs analysis including, but not limited to, establishing the status of performance of activities based on reported contractor performance information such as contained in the Cost Performance Report (CPR).

x. Determines value of this performance (CPR) in comparison to cost claimed, initially planned costs and provided projected costs with all impacts considered; in regard to schedule accomplished, compares to schedule planned and projects future schedule with all impacts considered. Recommends optimum approaches resulting from these determinations.

y. Prepares, maintains and updates the Development Plan (DP), Selected Acquisition Report (SAR), Project Work Breakdown Structure, and Five-Year Defense Program (FYDP).

z. Evaluates, coordinates and maintains the status of all programs and projects for assigned material by evaluation and analysis of C/SCSC - derived reports, DA Milestone Reports.

aa. Plans, develops and coordinates all RECAP's and similar reviews and presentations.

bb. Directs, develops and coordinates methods of statistical and progress reporting.

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cc. Is responsible for the coordination and development of MICVS interface support agreements with other participating organizations.

dd. Prepares and maintains program history.

ee. Serves as the focal point in providing program data for the use of Government Accounting Office (GAO), Congressional committees, US Army Audit Agency (USAAA), DA/AMC Inspector Generals and other agencies involved in reviewing, evaluating, and inspecting the MICVS program.

ff. Acts as Data Management Office (DMO) for the Project Manager. Prepares, assembles and distributes Contractor Authorized Data List based on Army Authorized Data List (ADL); also prepares the Management Systems Summary List.

gg. Designs, develops and coordinates management of the Emergency and Mobilization planning, including integration of all sub-plans for assigned projects, and provides guidance and direction to all segments of the Project Manager's organization and performing agencies for emergency and mobilization planning.

hh. Participates in the preparation and monitoring of project energy conservation plans.

ii. Coordinates the preparation and staffing of cost reduction submissions.

jj. Monitors and coordinates the evaluation of contractor cost estimates to include the unit product cost, estimate at completion, etc.

APPENDIX 5

Extract from M60 Production Project Organization and
Functions Regulation

PROJECT MANAGER M60
(PRODUCTION)
OFFICE OF THE CHIEF

SYSTEMS MANAGEMENT
INFORMATION OFFICE

US ARMY TANK PLANT OFFICE

DIVISIONS:
CONTRACT MANAGEMENT

BRANCHES:
CONTRACT ADMINISTRATION
PROPERTY ADMINISTRATION
PRODUCTION OPERATIONS
QUALITY ASSURANCE

BRANCHES:
TANK ASSY TEST & ACCEPTANCE
MANUFACTURING SUPPORT

OPERATIONS DIVISION

BRANCHES:
PROCUREMENT ~~MANAGEMENT~~
PROGRAM MANAGEMENT
COST ANALYSIS
FOREIGN MILITARY SALES
OFFICE

MATERIEL DIVISION

BRANCHES:
SUPPORT
PRODUCTION

PROJECT MANAGER, M60 TANKS PRODUCTION

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OFFICE OF THE PROJECT MANAGER

MISSION:

Manage and direct the procurement, production, conversion, overhaul, rebuild and acceleration and then sustain the economical generation of high quality M48 and M60 Tank Series end items for the Army and other customers. Control the US Army Tank Plant. Plan, direct and control the allocation of all resources authorized for execution of approved projects. Operate in accordance with DOD Directive 5000.1, AR 70-17, AMCR 11-16, and other pertinent directives.

FUNCTIONS:

1. Provides overall direction, control and supervision of the activities of the organizational elements to which operational responsibility and authority have been assigned or delegated.
2. Provides general administrative services for all organizational elements to include security, personnel matters, training, office supplies, mail distribution and control, records management, reports management, property and equipment control, payroll matters, and related functions.
3. Establishes, maintains and communicates procedures to accomplish adherence to configuration standards during new production, vehicle conversion and overhaul on the M48/M60 series tanks.
4. Assures timely incorporation of approved changes into production/conversion/rebuild hardware.

SYSTEMS MANAGEMENT INFORMATION OFFICE

MISSION:

Responsible for developing systems for identifying incipient problems, analyzing schedules and technical program requirements to assure that program objectives are met and maintaining a visible up-to-date tank program status at all times.

FUNCTIONS:

1. Operates the management information center; develops and maintains the Project Manager's management information, reporting and automated systems for all aspects of production as required of M48 tank conversions, and M60 series overhaul for the purpose of identifying potential and actual problem areas, and predicting future project

new M60A1 Tank Production

positions in terms of schedule variances and technical problems.

2. Develops briefings for formal tank program review and provide briefings to key personnel.

3. Reviews ongoing programs to determine appropriateness of current program schedules and to develop new alternative production schedules as required.

4. Serves as a point of coordination for Systems Analysis and management information performed by agencies outside of the Project Manager Office.

5. Conducts studies ~~concerning~~ for the
Project Manager concerning tank production.

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Cpt Ament provided information on the internal structure and responsibilities of the Systems Management Information Office
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Hq, USAMC, April 1974.
This regulation contains the XM1 Project Manager's Charter and a model Organization, Missions and Functions Regulation for a P.M. office.
3. AR 20-17 Research and Development: Project Management,
Hq, DA, 16 June 1975
This AR describes Project Management procedures and contains definitions of terms.
4. AR 20-27, Research and Development: Outline Development Plan, Development Plan, Army Program Memorandum, Defense Program Memorandum, Decision Coordinating Paper,
Hq. DA 17 March 1975.
This AR outlines the required contents of various Army program documents.
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5 March 1976.
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6. DROPM-UA Reg. 10-1, Organization, Mission and Functions
Hq. DARCOM, April 1976.
This lists the function of the Program Management Division of UTTAS PM office.
7. Development Plan, XM1
This is the master document for the XM1 project.
8. Lek, Col. Lauris, P.M. for Project Management, Hq. DARCOM.
Lecture at DPMC 6 Oct. 1976. This lecture contained the funding levels for the XM1 project and the P.M. office staffing strength.
9. Franzoi, ---, Chief, Program Management Division, UTTAS
Project Manager's Office. Telephone conversation
14 Oct. 1976.
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10. Huff, LTC Jerry, Program Management Division, XMI Project Manager's Office. Lecture to PMC 75-2, 10 Oct. 1975.
LTC Huff discussed the evolution of the current organization of the Program Management Division of the XMI P.M.'s office.
11. Lipinski, LTC Robert, Chief, Plans, Schedules and Studies Branch, Program Management Division, XMI Project Manager's Office. Telephone conversations, sept. and Oct. 1976.
LTC Lipinski provided most of the information concerning the actual functions of the Plans, Schedules and Studies Branch.
12. Logan, Maj. James, formerly in Test Management Branch, Systems Engineering Division, XMI Project Manager's Office. Conversations Sept. and Oct 1976.
Maj. Logan provided a great deal of background on the evolution of the Plans, Schedules and Studies Branch.
13. M60 Tank Development Project, Organization and Functions Regulation, undated.
This regulation details the function of the Program Management Division of the M60 Tank Development Project Manager's Office.
14. M60 Tank Production Project, Organization and Functions Regulation, undated.
This regulation details the functions of the Systems Management Information Office of the M60 Tank Production Project Manager's Office.
15. McLeod, Cpt. Hugh S. Program Management Division, MICV Project Manager's Office. Telephone conversation, 14 Oct. 1976..
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16. MICV3 Memorandum 10-2, Organization, Missions and Functions Manual, 25 November 1975.
This regulation details the function of the Program Management Division, MICV Project Manager's Office.
17. Mooney, Carl, Chief , Program Management Division, M60 Tank Tank Development Project Manager's Office. Telephone conversation, 14 Oct 1976.
Mr. Mooney detailed the internal organization and functions of the Program Management Division, M60 Tank Development Project Manager's Office.

18. Williams, LTC Glen W. An Examination of the XM1 Tank Systems Acquisition Program in a Peacetime Environment. Study Report PNC 74-1, DDMC.
LTC Williams discusses the history of the XM1 Project.
19. XM1 Regulation 5-2, Schedule Control System, 12 Aug. 1976.
This regulation describes the schedule control System used in the XM1 project and describes the monthly schedule meetings.
20. XM1 Regulation 10-2, Organization, Mission and Functions, 12 March 1976.
This regulation details the organization and function of the Plans, Schedules and Studies Branch of the XM1 Project Manager's Office.